

CALIFORNIA Profile: Jobs and the Environment

The economy of California supports numerous jobs related to environmental protection or clean technology which complements environmental protection.

- California had approximately 174,000 green jobs in 2009 according to Next 10, and is the leading state in green jobs.¹
- California's green jobs have grown nearly 57% since 1995, and 3% between 2008 and 2009 while total state employment grew by 18% and less than 1%, respectively.¹
- 433,333 Californians (or 3.4% of the state workforce) are working on green products and services, according to California's Green Economy Survey.²
- California is home to over 10,200 green-tech companies.³
- Green jobs' share of total California employment has increased 33% between 1995 and 2009 (from .6% to .9%).¹
- Recent employment growth has been exceptionally strong in energy generation, energy storage, and clean transportation.¹
- Manufacturing represents 26% of all green employment, but only 11% of California's total employment.¹
- The top green occupation in California is carpentry, focused on green activities such as efficient construction or retrofits.²
- A 2011 study from the San Diego Foundation estimated that investments in renewable energy projects, including solar and biofuels, had brought in \$1 billion in investments to the region and future investments would result in 5,400 to 27,000 more jobs.⁴
- A study from UC Berkeley and Next 10 says that California's policies will create up to 403,000 jobs by 2020.⁵

There are 10,200 companies in California that currently support the development, deployment or maintenance of clean technology and could benefit from increased demand for products and services.

- Sampling of companies supporting energy efficient equipment or appliances:

¹ Next 10. 2010. Many Shades of Green: Diversity and Distribution of California's Green Jobs.

http://www.next10.org/next10/publications/pdf/2011_Many_Shades_of_Green_FINAL.pdf

² California Labor Market Information Division. 2010. California's Green Economy: Summary of Survey Results. State of California Employment Development Department.

http://www.energy.ca.gov/cleanenergyjobs/GrSurveyRpt_1115.pdf

³ California Governor's Office. 2010. Press Release: "Governor Schwarzenegger Celebrates Earth Day, Announces Sun Power Expansion in California." <http://gov38.ca.gov/press-release/14951/>

⁴ Centers of Excellence and The San Diego Foundation. 2010. Economic Vitality: Clean Jobs in the San Diego Region. http://www.sdfoundation.org/Portals/0/Newsroom/PDF/Reports/CleanEnergy_report121510.pdf

⁵ David Roland-Holst. 2008. Energy Efficiency, Innovation, and Job Creation in California. Center for Energy, Resource, and Economic Sustainability (CERES).

http://are.berkeley.edu/~dwrh/CERES_Web/Docs/UCB%20Energy%20Innovation%20and%20Job%20Creation%2010-20-08.pdf

- Serious Materials – **135 employees**⁶
- Sampling of companies supporting renewable energy:
 - Quantum Fuel Systems Technologies Worldwide, Inc., Irvine, CA – **101 employees**⁷
 - SunPower Corporation, statewide – **300 employees**⁸
 - Harrison Electric, Whittier, CA – **15 employees**⁹
- Sampling of companies supporting alternative fuel/high efficiency vehicles:
 - ISE Corporation, statewide – **140 employees**¹⁰
 - Achates Power – over **50 employees**¹¹
 - Propel Fuels, statewide – **21 employees**¹²

Many new jobs have been or are expected to be created in California related to clean technologies since 2009.

Renewable Energy Jobs

- *Recently Approved Solar Power Plants*¹³
 - Between August and December 2010, the California Energy Commission approved 9 solar projects that will provide over **8,000 construction jobs** and **1,000 operational jobs**. These plants are the Palen Solar Power Project, the Rice Solar Energy Project, the Abengoa Mojave Solar Project, the Beacon Solar Energy Project, the Blythe Solar Power Project, the Calico Solar Project, the Genesis Solar Energy Project, the Imperial Valley Solar Project, and the Ivanpah Solar Electric Generating System project. The plants will be constructed between 2011 and 2013.
- *Cobalt Biofuels*, Mountain View, CA¹⁴
 - Received sales tax exemption from the state in March 2010, and will be able to build a commercial biofuel production facility that is expected to create **3,000 construction jobs** and **1,300 permanent jobs** between 2010 and 2012.
- *Terra-Gen Power*, Tehachapi, CA
 - Alta Wind Energy Center broke ground in July 2010 and is expected to create over **1,500** domestic manufacturing, construction, operation, and maintenance jobs as the project is completed over the course of 2011.¹⁵

⁶ Governor Schwarzenegger Tours California-based Green Technology Company Serious Materials, Announces Signing of Legislation to Promote California's Green Economy. April 21, 2010. <http://gov38.ca.gov/press-release/14929/>

⁷ Quantum Fuel Systems Technologies Worldwide. 2011. 2010 Annual Report. <http://www.qtw.com/assets/u/AnnualReport2010PDF.pdf>

⁸ <http://investors.sunpowercorp.com/releasedetail.cfm?ReleaseID=530517>

⁹ Harrison Electric. Personnel. <http://www.harriselectric.com/id36.htm>

¹⁰ Manta. 2011. <http://www.manta.com/c/mmd86rw/ise-corp>

¹¹ Achates Power. 2011. <http://www.achatespower.com/factsheet.php>

¹² Propel Fuels, 2011. Our Team. http://www.propelfuels.com/content/about_us/

¹³ CA Energy Commission Approves 650 MW of Solar Power in California Desert. December 13, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-12-15_Approval_palen+rice_NR.html.

¹⁴ Gov. Schwarzenegger Highlights Plan to Spur Clean Technology Growth in California. January 12, 2011. <http://gov38.ca.gov/press-release/14185/>

- *Sunrise Powerlink Transmission Line project*¹⁶
 - Creating **400-500 construction jobs** during the construction period from December 2010 through end of 2012.
 - Is expected to facilitate thousands of additional clean energy jobs upon completion.
- *Solar Power, Inc., McClellan, CA*¹⁷
 - Loan from CEBFP allowed for purchase of equipment for newly constructed solar panel manufacturing facility, expected to retain and create **698 full-time jobs** between September 2010 and January 2011.
- *Insights, Inc.*¹⁸
 - Received \$1.3 million grant from the CEC in December 2010 to test promising technology that would create pipeline-quality natural gas from forest waste; the project could create **541 full-time jobs** by 2020 running four conversion plants.
- *Energy Innovations, Inc., Poway, CA*¹⁹
 - Received CEBFP loan of \$3.5 million in September 2010 to expand its manufacturing facility that builds highly concentrated photovoltaic (HCPV) systems; the expansion will create or retain an estimated **240 full-time equivalent jobs** by December 2011.
- *Clean World Partners, Sacramento, CA*²⁰
 - Received 1.3 million grant from the CEC in December 2010 for its biomethane production facility; the project will create **137 direct** and **87 indirect jobs** during construction, and **16 full-time positions** through 2030.
- *Calisolar, Sunnyvale, CA*²¹
 - Loan from CEBFP in August 2010 allowed for expansion of solar cell production facility, expected to have created **181 full-time equivalent jobs** in December 2010.
- *SunPower Corporation, statewide*²²
 - Announced in April 2010 that it will locate new manufacturing operations in Silicon Valley, expected to create over **100 jobs** there in late 2010.
 - Announced in November 2010 that it will expand its headquarters in San Jose, expected to add **200 jobs** to the existing 300 jobs there over the next two years.
- *Soliant Energy, Inc., San Bernardino, CA*²³

¹⁵ Gov. Schwarzenegger Applauds World's Largest Wind Project Breaking Ground in California.

<http://gov38.ca.gov/press-release/15678>

¹⁶ <http://gov38.ca.gov/press-release/15585/>; http://www.sdge.com/sunrisepowerlink/docs/srpl_whitepaper.pdf

¹⁷ Gov. Schwarzenegger Applauds Final Loans for Clean Energy Business Financing Program. September 15, 2010.

<http://gov38.ca.gov/press-release/16013/>

¹⁸ Energy Commission Awards Nearly \$6.4 million for Electric Vehicles, Biofuel, and More. December 1, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-12-01_award_EV_Biofuels_more_NR.html

¹⁹ Energy Commission Approves \$10.5 million in Loans for Solar Cell Manufacturers: California Companies Will Add More Than 430 Jobs. September 8, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-09-08_solar_cell.html

²⁰ Energy Commission Awards Nearly \$6.4 million for Electric Vehicles, Biofuel, and More. December 1, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-12-01_award_EV_Biofuels_more_NR.html

²¹ http://www.energy.ca.gov/releases/2010_releases/2010-08-25_Calisolar.html

²² <http://investors.sunpowercorp.com/releasedetail.cfm?ReleaseID=530517>

- Received CEBFP loan of over \$2 million in September 2010 to purchase equipment for its solar PV panel factory, which will create or retain an estimated **118 full-time equivalent jobs** by October 2011.
- *Morgan Solar, Inc.* Chula Vista, CA²⁴
 - Solar panel manufacturing plant expansion in November 2011 expected to create and retain **105 full-time jobs**.
- *Quantum Fuel Systems*, Irvine, CA²⁵
 - Solar panel manufacturing facility expansion in early 2011 expected to create or retain **94 jobs**.
- *Solaria Corporation*, Fremont, CA²⁶
 - Solar panel manufacturing plant expansion in fall 2010 expected to create or retain **79 full-time jobs**.
- *Stion Corporation*, San Jose, CA²⁷
 - Received \$5 million loan from the state in September 2010 to expand thin film solar module manufacturing capacity, and will add or retain **73 full-time equivalent jobs** by December 2011.
- *City of San Jose*, CA²⁸
 - The CEC awarded \$1.9 million to the City of San Jose in November 2010 to build and demonstrate a new system that turns trash into natural gas that can be used as a transportation fuel; the project is expected to create **15 construction jobs** and will create additional jobs when the plant is operational.

Energy Efficiency Jobs

- *Statewide Programs*
 - California Recovery Task Force awarded State Energy Program funding in February 2010 for energy efficiency and solar projects which is expected to have funded an estimated **1,100 jobs** in 2010.²⁹

²³ Energy Commission Approves \$10.5 million in Loans for Solar Cell Manufacturers: California Companies Will Add More Than 430 Jobs. September 8, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-09-08_solar_cell.html.

²⁴ <http://gov38.ca.gov/press-release/16013/>

²⁵ Gov. Schwarzenegger Applauds Final Loans for Clean Energy Business Financing Program. September 15, 2010. <http://gov38.ca.gov/press-release/16013/>

²⁶ Gov. Schwarzenegger Applauds Final Loans for Clean Energy Business Financing Program. September 15, 2010. <http://gov38.ca.gov/press-release/16013/>

²⁷ Energy Commission Approves \$10.5 million in Loans for Solar Cell Manufacturers: California Companies Will Add More Than 430 Jobs. September 8, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-09-08_solar_cell.html.

²⁸ Energy Commission Awards \$9.6 million for Electric Vehicles, Biofuel, and More. November 4, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-11-04_Electric_Vehicle+Biofuel_nr.html

²⁹ California Recovery Task Force Announces \$110 Million in Recovery Act Awards for Energy Efficiency and Solar Projects. February 11, 2010. <http://gov38.ca.gov/press-release/14416/>.

- \$29.6 million awarded to EnergySmart Jobs, the Energy Technology Assistance Program, and the Downtown Oakland Targeted Measure Project in May 2010 is anticipated to create over **1,200 jobs** and create a new clean energy workforce through aggressive training programs in 2010 and 2011.³⁰
- CEC awarded Energy Efficiency Conservation Block Grants in July 2010 to provide energy upgrades to 10,800 single-family homes and 2,000 multi-family buildings that are expected to create or retain over **2,000 jobs** from 2010-2011.³¹
- EnergySmart Jobs Program launched in September 2010 expects to create **214 new jobs**, provide energy efficiency jobs kills training for **400 people** and help retain more than **200** contractor and energy auditor positions throughout the state.³²

Advanced Vehicle Jobs

- *San Bernardino County Association of Governments*³³
 - The CEC awarded over \$35.6 million to the San Bernardino Associated Governments (SANBAG) in July 2010 to construct two LNG refueling stations and purchase up to 262 heavy-duty LNG trucks; the project is expected to create **82 construction jobs** and **346 permanent maintenance and service support jobs** beginning in fall 2010.
- *ISE Corporation*³⁴
 - Received CEC funding in July 2010 to produce a battery-electric transit bus for the Los Angeles Metropolitan Transportation Authority; the ramp-up in commercial production was expected to create **22 jobs in 2010**, and will create **60 jobs by 2012**, and **132 jobs by 2015**.
- *Motiv Power System, Bay Area*³⁵
 - Received CEC funding in July 2010 to incorporate an electric-drive system in a class 4 shuttle bus for public transit to be used in the Bay Area; the project was expected to create **19 jobs** in fall 2010.
- *Leyden Energy, Inc., Alameda County, CA*³⁶
 - Received nearly \$3 million grant from the CEC in November 2010 to improve its lithium ion battery pack production process; the project is expected to have created **11**

³⁰ Energy Commission Awards \$29.9 Million in Stimulus Funds for Clean Jobs Training, Energy Updates. May 10, 2010. http://www.energy.ca.gov/releases/2010_releases/2010-05-20_awards_clean_jobs_training.html

³¹ California Recovery Task Force Announces More Than \$12 Million in Recovery Act Dollars for Energy Upgrades, Clean Jobs Training. July 1, 2010. <http://gov38.ca.gov/press-release/15495/>

³² EnergySmart Jobs Program Launches in Sacramento. November 16, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-11-16_energysmart_job_ma.html

³³ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-07-02_trucks+buses_main-release.html

³⁴ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-07-02_trucks+buses_main-release.html

³⁵ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

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³⁶ Energy Commission Awards \$9.6 million for Electric Vehicles, Biofuel, and More. November 4, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-11-04_Electric_Vehicle+Biofuel_nr.html

technical and production jobs in December 2010, and is anticipated to create another **500 jobs** by 2012.

- *Wrightspeed, Inc.*, San Jose, CA³⁷
 - Received \$1.2 million grant from the CEC in December 2010 to demonstrate electric retrofit technology for commercial trucks; the grant is expected to have created **10 engineering jobs** in December 2010, and if the technology is proven the company will add **120 more jobs** by 2015.
- *Kenworth Truck Company*³⁸
 - Received award from the CEC in July 2010 to will demonstrate a hybrid electric drive system beginning in 2012 that at full commercialization is expected to create over **6,000 jobs** in California by 2025-2030.
- *Daimler Trucks*³⁹
 - Received \$750,000 grant from the CEC in July 2010 to develop a hybrid heavy-duty commercial vehicle; the project is projected to create **2,600 jobs** by 2020 at a rate of 130 jobs per 1,000 trucks.
- *TransPower*, Escondido, CA⁴⁰
 - Received \$1 million grant from the CEC in November 2010 to jump-start production of electric-drive trucks; company intends to increase production to 2,500 trucks and create **1,500 jobs** by 2020.
- *City of Reedley*, CA⁴¹
 - The CEC awarded nearly \$500,000 to the City of Reedley in August 2010 to install a CNG fueling station; the project is expected to provide more than **300 direct and indirect jobs** in the Central Valley upon completion.
- *BYD Auto Company*, Los Angeles, CA⁴²
 - Chinese auto manufacturer announced in April 2010 that it has decided to locate North American headquarters and new electric vehicle manufacturing facility in California, to create up to **150 jobs** between 2010 and 2011.
- *Mission Motor Company*, San Francisco, CA⁴³

³⁷ Energy Commission Awards Nearly \$6.4 million for Electric Vehicles, Biofuel, and More. December 1, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-12-01_award_EV_Biofuels_more_NR.html

³⁸ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

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³⁹ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

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⁴⁰ Energy Commission Awards \$9.6 million for Electric Vehicles, Biofuel, and More. November 4, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-11-04_Electric_Vehicle+Biofuel_nr.html

⁴¹ Energy Commission Awards \$3.5 million for Alternative Vehicle Technologies. August 25, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-08-25_Alternative_Vehicle_Technology.html

⁴² CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-07-02_trucks+buses_main-release.html

⁴³ Energy Commission Awards \$9.6 million for Electric Vehicles, Biofuel, and More. November 4, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-11-04_Electric_Vehicle+Biofuel_nr.html

- Received \$500,000 grant from the CEC in November 2010 to bring electric vehicle components prototypes into commercial production; will use the grant to build an assembly facility that is expected to create **100 jobs** by 2015.
- *Propel Fuels*⁴⁴
 - Received \$1 million grant from the CEC in August 2010 to create E-85 dispensers around the state; the project is expected to create or retain over **60 direct and indirect jobs** by the end of 2011.
- *Terex*⁴⁵
 - Received nearly \$500,000 grant from the CEC in July 2010 to demonstrate its hybrid system in 12 medium- and heavy-duty utility service vehicles; **over 30 jobs** are expected to be created and retained over the term of the project.
- *Electric Vehicles International, LLC, Stockton, CA*⁴⁶
 - Will produce a medium-duty electric vehicle with support from CEC funding awarded in July 2010 and create **20 new jobs** in 2011, which will increase as production increases.

California has several state policies that support or encourage clean technology, including technologies related to SCRs or scrubbers, energy efficiency, renewable energy and clean/more efficient automobiles.

- [Global Warming Solutions Act of 2006 \(AB 32\)](#): comprehensive set of regulatory and market mechanisms to reduce carbon emissions in California to 1990 levels by 2020
- [RPS](#): 33% by 2020
- [Energy Efficiency Resource Standard \(EERS\)](#): 10% reduction in forecasted electricity consumption by 2016; specific GWH reduction goals vary by year by utility
- [LCFS](#): 10% reduction in carbon content of fuels sold in-state by 2020, followed by further reductions
- [Automobile Emissions Standards](#): average passenger vehicle emissions reduction of 30% by 2016 (includes carbon dioxide, methane, nitrous oxide, and HFCs)
- [California State Energy Code \(Title 24\)](#): mandatory statewide energy code for commercial and residential buildings, exceeds 2009 IECC
- [Million Solar Roofs Initiative](#): \$2.9 billion incentive for building owners who install solar electric systems
- [Clean Energy Business Financing Program \(CEBFP\)](#): Low-interest loan program for clean energy manufacturing (has created about **1,588 clean jobs** in CA)⁴⁷

⁴⁴ Energy Commission Awards \$3.5 million for Alternative Vehicle Technologies. August 25, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-08-25_Alternative_Vehicle_Technology.html

⁴⁵ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-07-02_trucks+buses_main-release.html

⁴⁶ CA Energy Commission Boosts Cutting-Edge Trucks and Buses with Nearly \$20 Million. July 2, 2010.

http://www.energy.ca.gov/releases/2010_releases/2010-07-02_trucks+buses_main-release.html

⁴⁷ California Governor's Office. 2010. Press Release: "Gov. Schwarzenegger Applauds Final Loans for Clean Energy Business Financing Program." <http://gov38.ca.gov/press-release/16013/>

- [Property Assessed Clean Energy \(PACE\) Program \(SB 77\)](#): financing option for commercial and residential property owners to make energy improvements, supported with up to \$30 million from the Renewable Resources Trust Fund (predicted to create over **10,500 jobs**)⁴⁸
- [Public Interest Energy Research \(PIER\) Program](#): loan program for clean energy, energy efficiency, and clean vehicle technology research
- [Public Benefits Fund](#): \$65.5 million/year for renewables, \$228 million/year for efficiency, \$62.5 million/year for R&D
- [Incentives](#): numerous other tax incentives, grant programs, rebate programs, performance-based incentives, and utility programs to incentivize energy efficiency and renewable energy installations; programs exist at the state, county, and local levels

⁴⁸ California Governor's Office. 2010. Press Release: "Gov. Schwarzenegger Tours California-based Green Technology Company Serious Materials, Announces Signing of Legislation to Promote California's Green Economy." <http://gov38.ca.gov/press-release/14929/>